

Research Notes

A New Species of Chiton (Neoloricata: Ischnochitonidae) from the Galápagos Islands

A study of the chiton collections of the Allan Hancock Foundation (AHF), now in the care of the Los Angeles County Museum of Natural History (LACM), has resulted in the finding of an undescribed species of the family Ischnochitonidae from the Galápagos Islands.

Ischnochiton macleani, n. sp.

Figs. 1 and 2

Type material.—The holotype and 14 paratypes were collected at Tagus Cove (0°16'38"S, 91°22'44"W), Albemarle Island (Isla Isabela), Galápagos Islands, Ecuador, at a depth of 55 m, on rock and coral, on 13 January 1934 (AHF Station 147-34). The holotype, consisting of disarticulated valves, mounted girdle, and mounted radula, is deposited at the Natural History Museum of Los Angeles County (LACM-AHF 1853). Paratypes have been deposited at the California Academy of Sciences CASIZ Type Series 699, United States National Museum of Natural History (USNM 771232), American Museum of Natural History (AMNH 183856), Academy of Natural Sciences, Philadelphia (ANSP A7213), San Diego Natural History Museum (SDNH 69305), and the Los Angeles County Museum of Natural History (LACM-AHF 1854).

Color slides of the holotype and paratypes are filed in the California Academy of Sciences, Department of Invertebrate Zoology (CASIZ Color Slides Series 3335-3337).

Other material.—A single specimen of *Ischnochiton macleani* was collected at a depth of 91-128 m, on rock and shell bottom, between Albany and James Islands (0°10'45"S, 90°52'08"W), Galápagos Islands, Ecuador, on 24 January 1934 (AHF Station 183-34). The specimen, light brown in color, preserved in alcohol, is damaged; the posterior four valves are missing, and only fragments of the anterior valves are present. Nevertheless, the tegmental sculpture and girdle characteristics are sufficient to permit firm identification. Estimated length of the specimen is 4.5 mm.

Diagnosis.—Very small chitons, high arched, moderately carinated, light brown in color; end valves and lateral areas bearing well-formed, round tubercles; central areas with small granules, crowded together in the jugal areas, but, in the pleural areas, arranged in longitudinal ribs bent inwardly as they converge anteriorly; mucro anterior; sutural laminae sharp, semiquadrate, separated by a well-formed sinus; insertion teeth somewhat thickened at edges; slit formula of holotype 8-1-8; girdle covered with small, oval, striated, imbricated scales.

Description of holotype.—Oval in outline with high arch, moderately carinated; valves slightly beaked and mucronated; specimen, considerably curled, preserved in ethyl alcohol; estimated dimensions (including girdle) 5 mm in length, 3 mm in width, 1 mm in height; jugal angle about 90°.

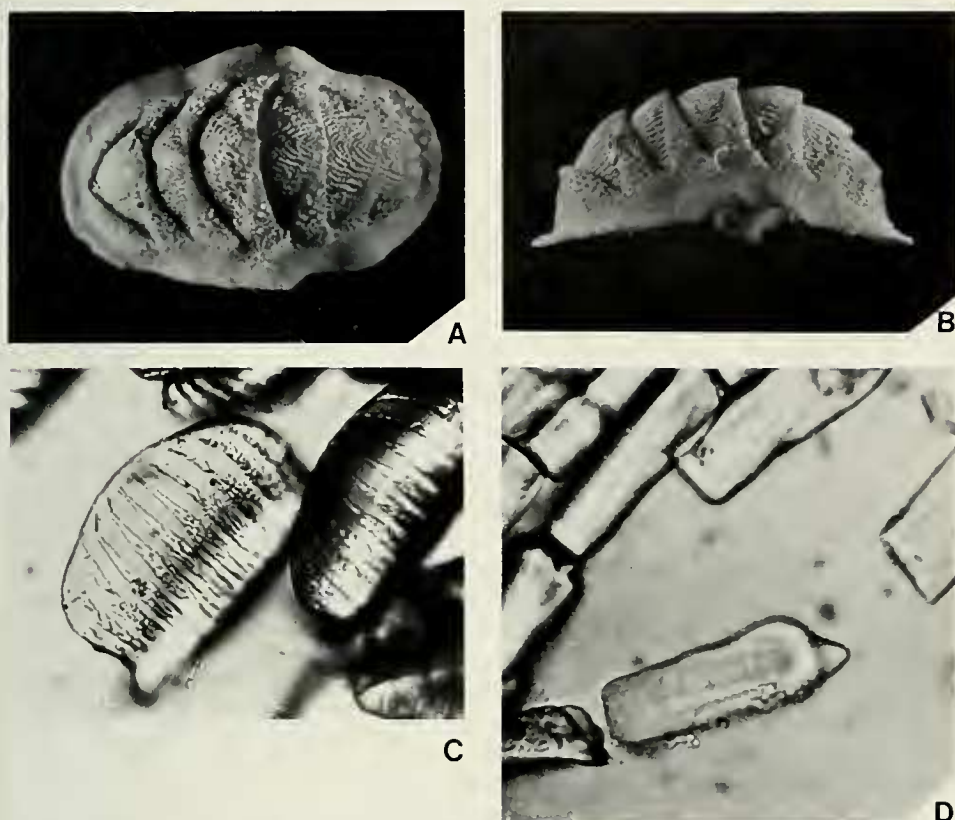


Fig. 1. *Ischnochiton macleani*, n. sp. A. Paratype, 6.2 mm long, LACM-AHF 1854, dorsal view; B. Same paratype, lateral view; C. Girdle scales of holotype, LACM-AHF 1853; D. Scales on underside of girdle of holotype.

Tegmentum a light brown color throughout; lateral areas of intermediate valves well-defined, but only moderately raised, bearing round tubercles, about $80\ \mu\text{m}$ in diameter and height, which seem to be disposed in four or five radial series; tubercles separated by a distance greater than twice their diameter; spaces apparently left by dislodged, broken tubercles produce a seemingly disordered distribution of tubercles on lateral areas, in anterior valve, and in postmucro portion of posterior valve; central areas of intermediate valves covered with well-formed, round, somewhat flat-topped granules, measuring about $40\ \mu\text{m}$ in diameter; in jugal areas, these granules are crowded mostly in quincunx, but in pleural areas are arranged in neatly defined longitudinal ribs, about 10 per side, which curve inwardly as they converge anteriorly; in posterior valve, mucro is discrete and definitely anterior; postmucro area is moderately concave.

Girdle lightly banded in two tones of brown, covered with imbricated, oval scales up to $100\ \mu\text{m}$ in length, and with 8–10 well-cut striations (Fig. 1C); a fringe of fine spicules (about $15\ \mu\text{m}$ in diameter) at outer margin of girdle, mostly short except for an occasional very long one (up to $300\ \mu\text{m}$); underside of girdle covered with very thin rectangular scales, $50 \times 20\ \mu\text{m}$ in size, many bearing a pointed mammilla pointing towards periphery (Fig. 1D).

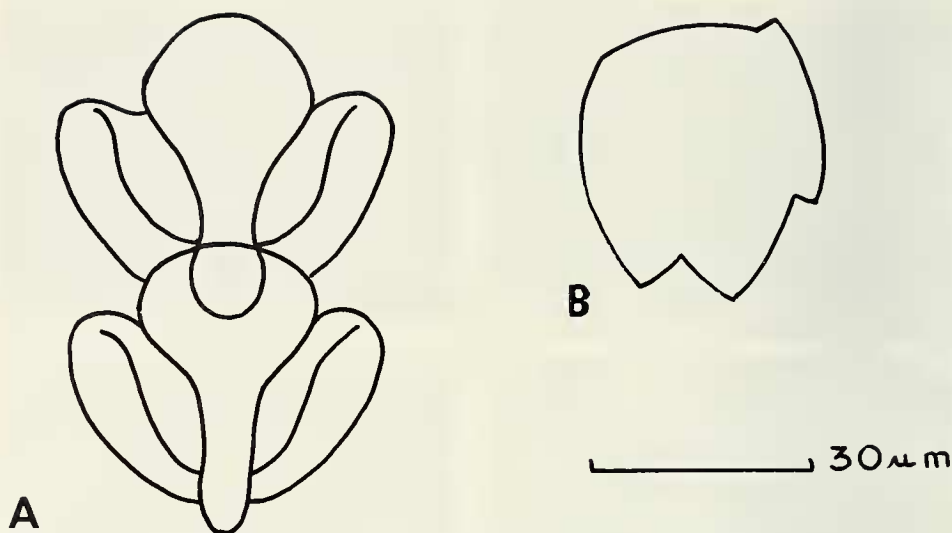


Fig. 2. *Ischnochiton macleani*, n. sp. Holotype. Radula: median, and first lateral teeth, and cusp of second (major) lateral tooth. ($\times 1000$).

Articulamentum white; sutural laminae sharp, short, subquadrate, separated by well-formed sinus; insertion teeth neatly cut, somewhat thickened at edges, and followed by slit-rays; slit formula 8-1-8.

Radula measures 1.90 mm in length and 0.35 mm in width, with 36 rows of mature teeth: median tooth (Fig. 2), wide anteriorly (30 μm), narrows medially (to 13 μm) but becomes somewhat globose at posterior end; first lateral tooth quadrangular with a thickened outer edge; second (major) lateral tooth has a tricuspid head on a thick (about $100 \times 50 \mu\text{m}$) shaft; marginal (outermost) teeth are slightly longer (45 μm) than wide (38 μm).

Remarks.—Judging from the observed specimens, *Ischnochiton macleani* does not show much variation in tegmental sculpture. Most specimens have no spiculate fringe, but that may be due to the fragility of the longer spicules. Color varies from a uniform light brown or tan to two tones of brown, with the darker brown tones usually in the pleural areas. Banding of the girdle is present in only eight of 16 specimens. All specimens are small, but apparently mature. The largest specimen (Figs. 1A, 1B) measures 6.2 mm in length, including the relatively wide (0.8 mm) girdle; the smallest specimen in the type lot measures 2.8 mm in length.

The tegmental sculpture of *Ischnochiton macleani* is remarkably similar to that found in members of the genus *Chaetopleura* Shuttleworth, 1853. However, the ischnoid articulamentum and the scaly girdle with no hairs or spicules (except for the marginal fringe) indicate that it belongs to the genus *Ischnochiton* Gray, 1847; the tegmental similarity to *Chaetopleura* may be regarded as an example of evolutionary convergence.

Ischnochiton macleani shows no obvious phylogenetic relationship to any one species of the genus. The lack of a sound subgeneric scheme in *Ischnochiton* (Ferreira, 1977) prohibits a subgeneric assignment at this time.

A recent list of chitons of the Galápagos Islands (Smith and Ferreira, 1977) included 11 species, of which seven (64%) appeared to be endemic. The finding of *Ischnochiton macleani* adds another probable endemic species to the list, raising the number of known chiton species in the Galápagos Islands to 12, of which eight (75%) can be considered endemic.

Etymology.—The new species is called *macleani* after Dr. James H. McLean, Curator of Malacology, Natural History Museum of Los Angeles County, who has generously contributed much of his time and knowledge to stimulate and encourage my interest in the study of chitons.

Acknowledgments

I wish to express my appreciation to Dr. James H. McLean, Curator of Malacology, Los Angeles County Museum of Natural History for trusting the chiton collection to my study, and for critically reading the manuscript.

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Accepted for publication December 23, 1977.

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